THE AMERICAN GASTROSCOPIC SOCIETY

BULLETIN

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PRESIDENT'S PAGE

The American Gastroscopic Society may well be considered a phenomenon of the modern medical age. Formed originally as a small Club and devoted simply to intelligent direction of the use of a new diagnostic instrument, it was considered by many, from time to time, to have outlived its usefulness. Each time, however, it resisted consignment to oblivion. Each time it exhibited a defiant will to live and grow that was electrifying. Each time refinements and offshoots of the original method were introduced which widened the field of interest of the members. As a consequence, the Society, far from succumbing, has grown progressively stronger and more vital. Your officers pledge their every effort to sustain and nourish this unquenchable spirit.

Our last Annual Meeting was indeed a memorable one. It represented without doubt the high point of our relatively young organization and for it we shall be eternally grateful to the efforts of our outgoing President, Dr. Clifford Barborka, and our outgoing Secretary, Dr. C. Wilmer Wirts. It was our privilege not only to have personally presented to us newer methods of study that have engaged the interests of colleagues from all over the world, but we were further honored by the acceptance of Honorary Membership in our Society by our distinguished foreign guests. The attendance at the Scientific Session set a new mark and the Annual Banquet, highlighted by an address by Supreme Court Justice Douglas, was a signal success.

It is somewhat discouraging to contemplate next year's program after this year's star-studded show. Leading workers from foreign areas will not be available and the pomp and glitter attending participation in a World Congress will be missing. Yet, I feel confident that with the help and cooperation of all our members an interesting and informative meeting can be arranged. Each member will very shortly receive (or may have already received by the time this is published) a communication requesting suggestions for the scientific program which will be held on Sunday, June 7, 1959 at Atlantic City. Your prompt and full reply will be greatly appreciated and will be most helpful to the Program Committee (Dr. Arthur Olsen, Chairman, and Drs. C. Wilmer Wirts and Frank McGlone). Please remember we are meeting at Haddon Hall at a highly convenient time—just after the American Gastroenterological Association and just before the American Medical Association.

Finally, a word about our Bulletin. The improvement in this publication must have been evident to all. Your Governing Board has directed that this be carried still further. Under the continuing able Editorship of Dr. Roy Lyman Sexton, efforts will be made to produce an issue four times yearly. Application will also be made for official listing and indexing of the Bulletin and its contents. Abstracts of the presentations at the Annual Meeting will be published in the Bulletin as a regular feature, while the complete papers will be published as a separate section in Gastroenterology. Dr. John Tilden Howard, the new Chairman of the Editorial Board, will be in charge of all matters pertaining to editing and will have professional editorial assistance made available to him. All that remains now is for the members to submit material—articles, instructive case reports, comments and editorials. Your active contribution to the Bulletin is not only invited but is earnestly solicited.

J. EDWARD BERK

June 17, 1958

PROCEEDINGS OF THE SEVENTEENTH ANNUAL MEETING OF The American Gastroscopic Society

Washington, May 24, 1958

President Barborka:

We will not bore you with a presidential address from me.

I think that we of The American Gastroscopic Society are, indeed, honored and most fortunate to have as our guests on this program so many world authorities. As I stated in our recent Bulletin, our Society feels a great impetus of interest and enthusiasm at this meeting. I trust that it will bring out new aspects of our field and opportunities to document factors that we see fleetingly, many times all too fleetingly, for competent and adequate interpretation.

With a warm welcome to all of you, members, guests, and honored speakers, we will begin our program.

Gastric Ulcer as Seen in Australia (Abstract)

JOHN HORAN, M.D.*

The author limits his subject to gastric ulcer as he has seen it through the gastroscope and he reports the findings in 120 cases.

The ulcers found by Dr. Horan follow Moutier's "ulcer-path." When their locations are plotted, they are found to be on the lesser curvature and the posterior wall in the upper stomach; as one goes downward the ulcers tend to follow the lesser curvature toward the anterior wall where they fan out into the antrum. Thirty-one ulcers were in the upper third of the stomach and 14 of these were on the posterior wall. In the pars media the ulcer bearing area was on the lesser curvature anteriorly and there were 50 lesions in that situation. There were only 13 ulcers in the antrum. Only once was an ulcer seen on the edge of the pylorus. The author calls attention to the pathologists' reports of the frequent finding of gastric ulceration in the antral portion of the stomach. Dr. Horan is much concerned about the possibility of malignancy in antral ulceration and he considers the diagnosis of an ulcer at that site as being a clear indication for gastrectomy.

The writer has been much impressed by spasm of the gastric antrum and he believes that it plays a real part in determining the position of so many chronic gastric ulcers on the lesser curvature of the stomach just above or at the incisura. Dr. Horan has the concept that antral spasm is a kind of obstruction which favors the stagnation of gastric juice. He suggests that a similar mechanism produces peptic ulceration in the sac of an hiatal hernia.

Acute gastric ulcer is a kind of erosion and Dr. Horan feels that it produces symptoms similar to those of chronic ulceration except that the pain is more mild and the duration of an attack is three or four days rather than a similar number of weeks. Such erosions have been observed by the author. Occasionally the acute ulcers may be seen on roentgen study as well as with the gastroscope.

Petechial hemorrhages have been seen in association with gastric ulceration, with duodenal ulcers, and once with jejunal ulcer. The location of the intramucosal hemorrhages tended to follow the pattern of the location of peptic ulcers. However, when subsequent gastroscopic examinations were made to follow the course of petechiae, they were never seen to break down into acute ulcers.

The writer had difficulty at times in visualizing peptic ulceration near the pylorus because a "contraction ring" proximal to the actual pylorus formed a pseudo-outlet to the stomach and the true pylorus was never seen. Dr. Horan found it difficult to see the lower end of the stomach in patients with pyloric obstruction. The usual blind spots in gastroscopy are mentioned as obstacles to a satisfactory examination.

The author has been unable to correlate gastroscopically diagnosed gastritis with the formation of peptic ulceration and he feels that the two conditions are not really related. The writer has never seen chronic hypertrophic gastritis associated with chronic gastric ulcer and the former condition has been very rare in Dr. Horan's experience.

Lastly, the author discusses gastric deformities which resulted from the scarring of

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Read before The American Gastroscopic Society, Seventeenth Annual Meeting, Washington, D.C., May 24, 1958.

gastric ulceration. These deformities produced pouches.

Gastroscopic Findings in Advanced Cirrhosis

PABLO INIGUEZ, M.D.*

From the time I studied with Schindler, I wondered whether or not there were any changes in the gastric mucosa of patients with cirrhosis of the liver. The possibility of some relationship between cirrhosis of the liver and chronic gastritis, especially chronic atrophic gastritis, seemed to be worth investigating. The role of nutritional deficiency in cirrhosis of the liver and its importance in chronic gastritis, the atrophy of the gastric mucosa in pernicious anemia and the common macrocytic anemia in cirrhosis of the liver, asked for more study of the subject. However, for a time few gastroscopies were performed on cirrhotic patients because of fear of hemorrhage from trauma with the gastroscope to the esophageal varices that we find so often in these patients.

In July 1956, Dagradi, Olson and Stempien published, in Gastroenterology, a report of 50 gastroscopies in cirrhotic patients and their results were very interesting indeed. They found gastritis in 82% of their cirrhotic patients and 18% had normal mucosae. Chronic superficial and chronic atrophic gastritis were found in 70% of the total group. They concluded that "the presence of liver cirrhosis in alcoholic patients is associated with a greater incidence of chronic superficial-atrophic gastritis than in previously reported non-cirrhotic alcoholics."

For this work 50 cirrhotic patients were studied; all of them were advanced cases with ascites and the diagnosis had been confirmed by liver function tests, biopsy or autopsy.

A very important point is the fact that the majority of these patients were not alcoholic, but people who had been chronically starved. These patients were from the interior of our country; they had a low intellectual level with no idea of the meaning of a balanced diet and hygienic habits of living. Women among them would not eat fruit during their menses and sometimes they would not eat fruits again after their menses first appeared, no matter how long they might live and regardless of the abundance of tropical fruit around them. They did not eat a great deal of protein either.

In 35 non-alcoholic cirrhotic patients there were 21 with normal mucosae, 11 with atrophic gastritis, and 3 with chronic superficial gastritis. In 15 alcoholic cirrhotic patients there were 11 with gastritis and 4 with normal mucosae. The total number with chronic atrophic gastritis was 22 out of 50, or 44%. There were 20 patients with marked macrocytic anemia and only 4 of them had atrophic gastritis; on the other hand, there were 30 patients with normal or slightly subnormal hemograms and 18 of them had atrophic gastritis, 3 had superficial gastritis and 9 had normal mucosae.

CONCLUSIONS:

Firstly, in 50 cases of advanced cirrhosis there was an incidence of 50% with chronic superficial atrophic gastritis. Secondly, the incidence was much higher in alcoholic cirrhotic patients than it was in non-alcoholic cirrhotics. Thirdly, the incidence of chronic gastritis was much higher in patients with normal hemograms than it was in patients with macrocytic anemia. This probably means that there is no relationship between the anemia and the chronic gastritis in cirrhotic patients.

Obviously these results do not show what we expected to find when we began to study the subject. As is usually the case, the first group of patients had a very high incidence of normal mucosae and then, later on, the cases with gastritis appeared in greater number. This, of course, is enough to make one reluctant to depend upon the statistical value of this type of work.

There is, for instance, more gastritis in the cases studied by Dagradi and his group than we found in our patients; they had 82% and we had only 50%. However, there seems to be a tendency to a higher incidence of chronic gastritis in alcoholic cirrhotic patients than in non-alcoholic cirrhotics or in non-cirrhotic alcoholics.

*Clinic Hermandez-Inchaustegui, Ciudad Trujillo, Dominican Republic.
Read before The American Gastroscopic Society, Seventeenth Annual Meeting, Washington, D.C., May 24, 1958.

Combined Gastroscopy and Direct Vision Biopsy: Method and Application (Abstract)

P. E. THOMPSON HANCOCK, M.D.*

Dr. Hancock has attached to the exterior of the Hermon Taylor gastroscope a biopsy apparatus of the type devised by Dr. Margot Shiner. The biopsying tip is on the same surface of the 'scope and just above the objective window when the instrument is passed and withdrawn. It can be pushed downward and in front of the window when it is to be used. A wire spring tends to keep the biopsying tip about 1 cm. away from the window when it is ready for action. Sometimes air has to

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be released from the inflated stomach to get the orifice of the biopsying tip against the mucosa, though usually the controlled flexibility of the Hermon Taylor gastroscope will enable the orifice of the biopsying attachment to be placed against the mucosa.

Dr. Hancock has used the instrument on 65 patients and he has had no trouble with it. The specimens are unfragmented and adequate for histological purposes. He can take the specimen from a chosen site frequently. He has no more difficulty in introducing the instrument with the attachment for taking biopsies than he has had with the Hermon Taylor gastroscope alone. He considers the instrument to be one which can be safely used.

Combined Gastroscopy and Direct Vision Biopsy: Histological Findings (Abstract)

MARGOT SHINER, M. D.*

Dr. Shiner studied six aspects of the tissues obtained by suction biopsy at gastroscopy with the device described by Dr. P. E. Thompson Hancock.

The first study concerned the confirmation by biopsy of lesions seen gastroscopically. Twelve gastric ulcers were visualized and 11 were grossly benign. Biopsies taken from the edge of the ulcers confirmed the benignity of the process in all 11. The twelfth patient showed some irregularity of the ulcer which suggested that it might be a carcinoma. Histologically the evidence for cancer was doubtful. Carcinoma of the stomach was diagnosed gastroscopically in 2 patients but it was confirmed histologically in only 1. In 1 patient there was suggestive leukemic infiltration. Biopsy of the mucosa did not confirm that.

The second study concerned the correlation between the gastroscopic and the histologic appearance of the general mucosal picture. The gastroscopist and the pathologist agreed in 5 cases and they disagreed in 6. Whenever gastric atrophy was present grossly it was confirmed histologically.

The third study correlated the roentgen findings, the gastroscopic findings, and the histologic findings. In 2 cases a mucosal biopsy showed carcinoma of the stomach when the x-rays had been negative. In 1 of these cases the gastroscopic appearance was that of superficial gastritis; in the other the gastroscope showed irregularity and stiffness in a portion of the gastric wall.

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The fourth study concerned similarities or dissimilarities in multiple suction biopsies at the same gastroscopic examination. In 8 patients only 1 showed a gastroscopically abnormal appearance. Two suction biopsies from that stomach were normal. In the remaining 7 patients with presumably normal mucosae, multiple biopsies were in agreement in 3 and there was disagreement in 4 cases.

The fifth study concerned the microscopic appearance of mucosae taken from the stomata of patients who had had partial gastrectomies. It was found, in 7 patients, that the mucosa on the gastric side was of the type found in the small intestine. The author wondered whether or not this predisposed to stomal ulceration.

The last investigation compared the histology of specimens taken with the blind biopsy technique with those taken by direct vision in patients with gastric ulceration. With both methods one-third of the patients with healed or active peptic ulceration showed normal mucosae. Two-thirds showed some type of gastritis.

Dr. Shiner believes that a biopsy at the time of gastroscopy is useful, for with it one may make the diagnosis of a neoplasm and confirm or refute the gastroscopic diagnosis of gastritis. She feels that, except in gastric atrophy, there is no uniform histologic picture throughout the mucosa of any stomach.

Gastroscopic Biopsy* (Abstract)

EDWARD B. BENEDICT, M. D.†

The author reviews a number of published papers by himself and others, papers which pointed out the value of biopsies of the gastric mucosae at the time of gastroscopic examinations.

Then he refers to papers which indicate that the gastroscopic appearance of the stomach's mucosa does not correlate well with the biopsied specimen in the diagnosis of gastritis.

Dr. Benedict sketches a series of cases to illustrate the way in which a gastroscopic biopsy can make the diagnosis of carcinoma when the question prior to gastroscopy is whether or not the lesion is one of gastritis or of lymphoma, to demonstrate the way in which gastroscopic biopsy may prove a phytobezoar to be in the stomach, to show how clinical judgment may demand surgical ex-

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ploration of the stomach in the face of a negative gastroscopic biopsy, to show that gastric atrophy may be present when the stomach's mucosa is grossly normal, to point out that the severity of visualized gastritis cannot be determined solely from the gross appearance of the mucosa, and to illustrate that a grossly normal gastric mucosa may show definite gastritis and atrophy on microscopic examination.

Dr. Benedict feels that gastroscopy should be reserved for difficult problems rather than to be used routinely. He considers a gastroscopic examination to be incomplete unless a biopsy of the gastric mucosa is obtained in some manner. He considers gastroscopic biopsy under direct vision to be particularly useful in differential diagnosis. From studying the inconsistencies between the gross appearance of the stomach's mucosa and that of biopsied mucosa, Dr. Benedict feels that the terms "superficial gastritis" and "hypertrophic gastritis" have no present usefulness. He would substitute for them the terms "acute gastritis" and "chronic gastritis." He would also continue to use the expression "gastric atrophy."

The Gastroscopic Diagnosis of Chronic Gastritis (Abstract)

NORBERT HENNING, M.D.*

The gastroscopic diagnosis of chronic gastritis is a macroscopic one and it should be verified by histologic examination. In the hands of the author, suction biopsy has been the only suitable routine method of obtaining specimens of the gastric mucosa. To mid-February of this year, the author and a colleague had studied 2,541 specimens obtained with a suction biopsy apparatus from 2,100 patients; there had been no complication in that long series. The paper compares the gastroscopic diagnosis, the histologic diagnosis, and the cytologic diagnosis of gastritis. Material for cytology was obtained with the cell-swab method, described in 1949.

The author describes the normal gastric mucosa and the cytologic picture (which he calls a gastrocytogram) of the normal stomach. He describes the microscopic appearance of superficial gastritis. He states that, in general, the gastrocytogram in patients with superficial gastritis shows nothing very abnormal, though there are exceptions and he may be able to make the broad diagnosis of gastritis from recovered cells. The author describes the microscopic appearance of atrophic gastritis. And he considers the gastrocytogram to be quite diagnostic of mucosal atrophy with its anisocytosis, anisokaryosis, and marked vacuolization of the cytoplasm; there are goblet cells in the material obtained from the stomach, too. Enlargement of the nuclei of the cells, a tendency toward multiple nuclei, and vacuolization make Dr. Henning suspect at times that atrophic gastritis is a precancerous condition.

Prior to the initiation of the taking of suction biopsies, the author had considered that the fundus of most stomachs in patients with duodenal ulceration showed granulations which he interpreted as hypertrophic verrucous gastritis. Then he began to take biopsies with the suction technique from the upper ends of the stomachs of patients with duodenal ulceration and he found a histologically normal mucosa in a very large number. In patients with gastric ulcers a normal mucosa was found on biopsy less frequently. And in patients with gastric carcinoma a normal mucosa was even more rare.

Dr. H found that 24% of patients with "stomach complaints" but without ulceration or cancer had gastric atrophy histologically. If gastroscopy alone was relied on, Dr. H believed that 75% of the cases of atrophic gastritis would be missed. Superficial gastritis was about twice as common in the histological picture as atrophic gastritis. Only 37% of the patients with superificial gastritis established by histologic methods had their trouble detected at gastroscopy. Dr. Henning found that a single biopsy was 88% accurate when it was compared to multiple biopsies in various portions of the stomach. Therefore, he considers multiple suction biopsies to be generally unnecessary. In patients who showed a normal mucosa at the first biopsy, a second biopsy showed gastritis in only 4% of cases and then the abnormality was always that of superficial gastritis. When the initial biopsy showed superficial gastritis, a second one showed either a normal mucosa or gastric atrophy in 12% of cases. In cases where the initial biopsy showed gastric atrophy, additional biopsies showed superificial gastritis in 25% of cases; when the initial histologic diagnosis was atrophic gastritis, a normal mucosa was never seen on an additional biopsied specimen.

From this data Dr. Henning concludes that a single biopsied specimen permits a high degree of accuracy in the diagnosis of the condition of the mucosa of the gastric fundus. From his observations he feels that combinations of superficial and atrophic gastritis indicate that these are stages of a single chronic inflammatory process. Though the author previously held the opinion that hypertrophic gastritis existed, he now believes that, from the pathological point of view, it is not a separate class of gastritis. All forms of gastritis terminate in gastric atrophy, in the author's opinion. Dr. Henning feels that the

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Read before The American Gastroscopic Society, Seventeenth Annual Meeting, Washington, D. C., May 24, 1958.

gastroscopic diagnosis of gastritis is not very reliable except when there is marked gastric atrophy and striking erosion. He has found cytologic examination of exfoliated gastric cells to be inferior to biopsy in the diagnosis of gastritis. He advises that a histologic diagnosis be made at all gastroscopic examinations.

Clinical Significance of Chronic Inflammations of the Stomach and of the Small Intestine (Abstract)

RUDOLF SCHINDLER, M. D.*

Dr. Schindler admits that the clinical significance of chronic gastritis and chronic enteritis is debatable. But his own opinions about the role of these conditions in the production of symptoms have been strengthened rather than weakened as time has gone on. He reports a case of chronic gastritis with such severe pain that a gastric resection was done with resultant complete relief of symptoms. He reports another case who had severe gastritis with no gastric complaints. He reminds gastroenterologists that silent peptic ulcers do occur and announce their presence by hemorrhage or by perforation rather than by chronic pain. The author cannot explain why marked anatomic changes produce symptoms in some individuals and not in others.

Dr. Schindler states that it is generally accepted that chronic hypertrophic gastritis may cause epigastric pain which is similar to that of gastro-duodenal ulcer. There are differences of opinion about the significance of chronic superficial gastritis. That such gastritis is symptom-producing is proven, in his opinion, by the production of pain when the patient's stomach is distended with air and by the presence of true achlorhydria, which he says occurs in many patients with superficial gastritis. To atrophic gastritis the author ascribes severe systemic, as well as local, symptoms. In gastric atrophy he has found the distension test to be positive when symptoms are present and negative in the absence of symptoms. He has frequently found it useful to tell a patient with atrophic gastritis that organic trouble is present and that when the condition runs its course the worst symptoms will disappear.

Dr. Schindler believes that gastroscopic biopsies are superficial and that, generally speaking, a proper biopsy is one obtained through an abdominal incision and which includes the entire thickness of the gastric wall.

Dr. Schindler considers the possibility of the association of enteritis with gastritis and with other organic diseases of the small intestine. To enteritis he is incined to ascribe gassy dyspepsia with diarrhea and weakness. In the stools of these patients he finds considerable undigested starch without excessive amounts of striated muscle and fat. Terminal ileitis, acute gastroenteritis, bacillary dysentery, intestinal parasitism, and allergic symptoms were present or had been present in a good many of the author's cases.

Dr. Schindler feels that many patients whose digestive symptoms are thought to have their basis in a neurosis may have chronic gastritis or chronic enteritis as the basic etiologic factor.

DISCUSSION

Dr. Ian Wood (Melbourne, Australia): Mr. President, Ladies and Gentlemen: With your permission I will speak for two and a half minutes and show three slides. (Slides)

When we began suction biopsy in 1948 and reported our studies in January 1949, we realized the relation between gastric changes and secretion, and the very little correlation between the biopsy findings and the gastroscopic ones. It is very, very encouraging to find with the passage of the years that so many people of great prominence have fallen into line with what we have found.

I strongly disagree with Dr. Schindler that suction biopsy is not adequate; I am sure it is. We have done about two thousand, and we have heard of other extensive series today.

Dr. Leonidas H. Berry (Chicago, Ill.):

I want to say just one word to emphasize further the clinical aspect of this very fascinating disease which we call chronic gastritis. I can heartily confirm the concepts of Dr. Schindler, concepts which he has advocated for many years, about the extensive symptom-complex associated with the disease which we call chronic atrophic gastritis.

I have many patients who show the symptom-complex of nausea, dizziness, occasional vomiting or diarrhea, bloating, nervousness, and so forth. I have the feeling that this is a part of a general symptom-complex which may be manifested by disturbances in the intestine or other parts of the body as well as in the stomach, and is on the basis of malnutrition. I, therefore, prefer to call this condition chronic atrophic or gastric mucosa, without committing myself as to whether or not it is inflammatory.

I won't have time to tell you about a large series of cases which I treated with injections of liver extract and vitamin B complex, cases in which I was able to relieve dramatically the symptoms to which Dr. Schindler referred and to observe in some of these cases rehabilitation. We ought to consider some of these things! While they are of great importance, they are not necessarily on an inflammatory basis.

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*Faculdade de Medicina, Universidade de Minas Gerais, Belo Horizonte, Brazil.

Read before The American Gastroscopic Society, Seventeenth Annual Meeting, Washington, D. C., May 24, 1958.

Regurgitant Esophagitis (Abstract)

HERBERT W. SCHMIDT *

Any set of circumstances which allows acid gastric secretions or alkaline duodenal secretions to come into prolonged contact with esophageal mucous membrane is capable of producing a chemical burn of the esophagus. If this burn is severe enough, or if it is allowed to exist long enough, two most unwelcome complications may occur. The first is an ulcer on the esophageal side of the esophagogastric junction, and the second is a connective-tissue reaction which occurs in the submucosal and muscular coats of the esophagus. The latter complication may cause shortening and stricture of this organ.

The circumstances most often responsible for the development of the above-mentioned lesions are prolonged vomiting, esophageal hiatal hernia, ill-advised surgical procedures at the esophagogastric junction for benign lesions, and retention of indwelling tubes in the esophagus through a long period.

A duodenal ulcer with obstruction is a hazardous lesion, because in this situation the hydrochloric acid values in the gastric secretions usually are high and this feature increases the likelihood that a chemical burn will occur within the esophagus as a result of recurrent vomiting.

Esophageal hiatal hernia of the sliding type probably is responsible for the development of esophagitis more frequently than is any other condition. Whenever the gastric cardia is displaced into the thorax, incompetency of the sphincter occurs and during recumbency gastric content is allowed to regurgitate freely into the lower part of the esophagus. Fortunately, only a small percentage of people who have hiatal hernias develop significant esophagitis and the complications that have been mentioned.

Ill-advised operations such as the Wendel type of cardioplasty or the Grondahl type of esophagogastrostomy, which have been employed in the past for the surgical treatment of cardiospasm, have produced ulcerative esophagitis. Such operations should never be done for cardiospasm. If at all possible, esophagogastrectomy should be avoided in cases of benign lesions of the distal esophagus, because after this procedure the sphincteric action of the cardia is abolished and gastric content is allowed to regurgitate freely into the lower esophagus.

In conclusion, it is apparent that preventive treatment is far more important than curative treatment in the problem of peptic or regurgitant ulceration of the esophagus. In preventive treatment it is important that the following four points be kept in mind: (1) everything possible should be done to prevent chronic vomiting and to correct lesions that might produce vomiting; (2) an esophageal hiatal hernia of the sliding type with evidence of significant esophagitis should be repaired; (3) unnecessary operations on the gastric cardia for benign lesions should not be done; and (4) tubes should not be left in the esophagus for long periods. (Dr. Schmidt showed an excellently prepared motion picture in color to demonstrate esophagitis and its complications as they are seen through the esophagoscope.)

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Read before The American Gastroscopic Society, Seventeenth Annual Meeting, Washington, D. C., May 24, 1958.

A Concept and Management of Gastritis (Abstract)

EMMANUEL DEUTSCH, M. D.*

A concept of the management of chronic gastritis has evolved in which the histologic examination of the gastric biopsy provides specific information which has advanced the rational management of chronic gastritis.

Based upon histological criteria, three well-defined stages—mild, moderate and severe—can be described.

The severe stage of chronic gastritis appears to be irreversible and corresponds to the refractory type seen clinically. The biopsies show replacement of the normal elements with mucus-secreting epithelium, lymphoid follicles, and a fibrous tissue reaction in the muscularis, presumably with concomitant loss of its specialized function.

Medical management of the mild and moderate forms, based on this concept, includes gastric suction, physical rest, fast days, smaller meals and a mucosal anesthetic administered orally in aluminum hydroxide. When peptic ulcer is also present, the lesion usually heals under such management. All of 91 patients suffering from chronic gastritis were relieved in some degree by this regimen.

When ulcer is associated with gastritis in the severe form, it does not usually heal under medical management and is best treated surgically.

The Design of Fiberscopes

JOHN H. HETT, Ph.D.*

We began work on fiberscopes at American Cystoscope Makers some 15 years ago. Our

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early experiments were with plastic fibers, but these were unsatisfactory because of high light absorption and low index of refraction. Glass fibers were tried later but we were troubled with fiber breakage and with light loss when the fibers were bundled. The light loss has finally been reduced to low levels by the techniques described by Dr. Peters. Further, the development of precision winding machinery for the formation of the fiber bundles reduces breakage.

We believe that these developments have rendered possible the design and construction not only of gastroscopes and duodenoscopes, but also of ureterscopes, choledochoscopes, proctoscopes and bronchoscopes. Because of the inherent limitation in definition of the fiberscopes we believe that the use of fiberscopes will be limited to those situations where a conventional optical system is not possible.

We will discuss briefly certain problems common to the design of all fiberscopes:

Objective Systems. For a given fiber bundle diameter, the best definition would be obtained by using a focal length as long as possible. But a compromise must be made because the longer the focal length the smaller the size of the object field. A second important limitation is that in the human body object distances are at most a few inches from the objective. It is possible to bring the objective some distance from the distal tip of the instrument but this is invariably at the expense of the field size.

A further difficulty arises with the objective focus. In an ordinary optical endoscope, as the object is brought closer to the objective, compensation is made by either moving out the eyepiece or by accommodating the eye. This is not possible with a fiberscope. With a fiberscope the image plane of the objective must fall very close to the distal end of the fiber bundle. This is illustrated by the following equation:

$$\text{Total depth of object field} = \frac{Z1}{R-Z} + \frac{Z1}{R+Z}$$

where 1=distance of the object from the lens
R=the radius of the entrance pupil
Z=the radius of the circle of confusion.

As an illustration we compute the depth of object field for arbitrary values. Put Z=0.05 mm., 1=25 mm. and R=3 mm. For this example the depth of object field is only 0.83 mm. In practice we may take about twice this value.

It is clear that either R must be taken very small, thus cutting down the light, or some form of mechanical focus shift must be provided.

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Thus it is also important to examine the depth of focus equation:

1. $\text{Depth of focus} = \frac{Z1'}{r}$

where Z=the radius of the circle of confusion
1'=the back conjugate distance of the lens
r=the radius of the exit pupil of the objective.

Since $\frac{1'}{2r}$=the effective f/number of the objective, equation #1 becomes

2. Depth of focus=2Z(f/number).

At the proximal end, the eyepiece should be of minimum power in order to reduce the mosaic appearance of the fiber bundle. Thus the ideal fiberscope would have a long focal length objective and a low power eyepiece. Clearly, each particular application of the fiberscope represents a compromise.

Coverings for Bundles. Since a glass fiber bundle is extremely flexible—it can be literally tied into knots—some form of stiffening is usually necessary to allow thrust and torque to be applied to the proximal end. Also, the bundle needs a protective covering. Here again usage largely dictates the solution. In a ureterscope an impervious woven cover, like a catheter, seems indicated. In a gastroscope, the cover might consist of a layer of latex, a very thin sheet of phosphor bronze or stainless steel cut in a helical spiral, and an outside cover of latex.

Illumination. There remains the important problem of illumination at the distal end of the fiberscope. Where relatively large diameter bundles may be used, as in a gastroscope or proctoscope, an incandescent bulb is the ready solution when visual use only is anticipated. But in the case of a choledochoscope or ureterscope, the bulb may interfere with the field of view. In the ureterscope, where the diameter is limited to about 9 French including the sheath, the best solution seems to be to use some of the fibers to convey the light from the proximal end to the distal end in a manner very similar to the way we illuminate the distal end of a quartz-rod photographic cystoscope.

We also have hopes of applying this technique to photographic gastroscopy. Much greater total light flux is required in a gastroscope than in a cystoscope because the total internal dimensions of the stomach are much larger than the bladder and a large area of the stomach wall is viewed at one time. Since the fiber gastroscope can operate at about F/5 and a gastroscope with lenses at over F/20, photography will be much improved. The present incandescent bulbs used for photography have the disadvantage of becoming very hot. Mercury vapor bulbs also become hot and

in addition, because of their high flashing voltage, present considerable shock hazard.

We have mentioned only a few of the applications of the fiberscope. As the instruments are perfected we expect this field to broaden greatly.

An Esophago-Gastroscope for Visualization of Blind Areas

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Despite combined use of a rigid direct vision (Eder-Hufford) esophagoscope and a flexible gastroscope, portions of the angulated lowermost segment of the esophagus, the cardia, and the posterior wall of the stomach remain blind areas. The lower esophagus may not be entirely visualized with a rigid direct-vision endoscope because of the angulation. On gastroscopy, because of the separation of the light and objective lens systems, air distension to displace the wall from the objective lens window is crucial for illumination. The posterior wall and the cardia cannot be visualized because of the failure of illumination of these areas when the surface of the mucosa is in direct contact with the objective lens window.

To remove these limitations, the head of the Eder standard, flexible, trans-esophagoscopic gastroscope was reconstructed so as to have one chamber containing the objective lens, mirror, and light systems covered with a single window. The light bulb was moved to a position immediately adjacent to the mirror, thus illuminating the mucosa directly opposite the mirror, whether the mucosa was far away from or directly in contact with the window.

The flexibility of the instrument allows passage into, and visualization of, the lower portion of the esophagus. It is passed through, and used as a supplement to the rigid esophagoscope, to visualize blind areas, as well as to obtain a magnified, on-face view of any lesion located with the rigid instrument. The modified instrument may also be used as a standard flexible gastroscope. This has the added advantage of illuminating and permitting visualization of the mucosa of the posterior wall of the stomach, of the cardia and of the lower esophagus when in direct contact with the objective lens window.

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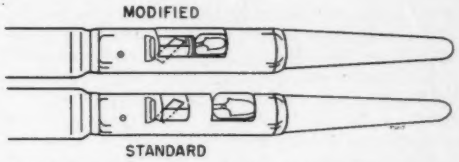

Modification of standard head of Eder gastroscope to allow illumination of mucosa in contact with observation window

Color Gastro-Photography With an Electronic Flash

CHARLES DEBRAY
and
PIERRE HOUSSET*

When he is investigating the largest, deepest and most complicated viscus of the body by gastroscopic examination, one needs objective documentation of what he sees. After briefly reviewing and analyzing different techniques generally used in that field, we shall show you the one we employ and the results obtained.

The first procedure is based upon introduction into the stomach of a tiny camera with pinholes used as objectives. This camera gives sixteen small color pictures. Light is produced by the flash of a tungsten filament.

This method used in past years by some Viennese authors (Porger, Heilpern and Back, 1929), by the French pathologists (Porcher, Garin and Bernay, 1931), and recently in the United States (Rafsky, 1943), seems undesirable for two good reasons. Firstly, the pictures are taken without any directional control on a previously unstudied area. Secondly, the interpretation of pictures obtained in this manner is difficult.

The second procedure is better, since pictures are taken through a gastroscope of gastric areas that have been previously examined. Many specialists use this technique.

Black and white photographs were obtained, first through a rigid gastroscope and then through a flexible one (Henning, Moutier, Hull). The first color pictures were obtained in the U.S.A. by Segal and Watson in 1948. They used lamps on which they could increase the voltage temporarily. The time of exposure was approximately half a second. But results did not prove satisfactory, since, even with those special lamps, light was insufficient. Too much time for exposure was needed and this resulted in fogged pictures because of the movements of the operator, the patient or the gastric wall.

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In order to obtain better results, we looked for another device with which we could make snapshots. We came to use a gastroscope with a built-in, tiny electronic flash that would illuminate the interior of the stomach.

Equipment

The equipment includes a gastroscope, a camera and an electric generator.

The *gastroscope* is equipped with a special interchangeable lamp-case; it is 15 mms. longer than the standard one. The lamp-case houses side by side the exploratory incandescent lamp and the flash lamp.

The *camera* is attached to the gastroscope after the removal of the eye-piece. It has a reflex system with a rotating mirror. Standard Kodachrome, daylight type films are used. Exposure time is about one-twenty-fifth of a second, while the flash time, the only important one, is one-thousandth of a second. Pressing on the camera-button activates both the shutter and flash.

The *generator* finally is arranged to feed both the exploratory lamp and flash.

Security of both patient and operator is assured by isolation and coating of all wires and grounding the entire apparatus. A relay, that shortens the high tension time, is also inserted in the wiring.

Technical Considerations

Taking pictures is very simple. The gastroscopic exploration is made as usual. One may find that the intensity of light available is not high enough. Further researches are presently being done to improve the source of light for that purpose. When the area to be photographed has been selected, the eye-piece is removed and the camera is fastened in place. The lens is focused and then the picture can be taken by simply pressing on the camera-button. This may be repeated as many times as desired, provided one waits ten or twenty seconds while the generator recharges.

In order to avoid air bubbles and to lower the gastric secretion's viscosity, we take advantage of a silicone suspension, as advised by American authors (Hirschowitz, Bolt, Pollard). This helped us a great deal in improving the quality of our pictures.

Comments

Three hundred pictures were taken of the stomachs of 80 patients. Never did we have any trouble.

The picture obtained is only 6 mms. in diameter but it can be enlarged easily to 24 mms. or more. The accuracy of the color is good. But all pictures obtained are not as perfect as those which we will show you.

Some difficulties arise from the patient himself, as in any endoscopic procedure. Visibility may be troubled by mucus, blood or gastric secretions. Sometimes, especially in gastritis, the patient regurgitates the air as soon as we try to inflate the stomach. More often a "cat's-eye view" is obtained through a gastroscope which is too sharply curved.

The adjustment of the apparatus might also cause bad results. Improper focusing, or imperfect fixation of the camera on the gastroscope, is contributory to poor pictures at times.

The type of film must be carefully chosen. We definitely cling to daylight type Kodachrome after many trials of other makes. The grain of Anscochrome is too coarse and it is too sensitive. Ektachrome film, since it provides reddish-tinted colors, is less satisfactory.

One should always be certain that the flash is working. This can be ascertained by using the open-flash button placed on the generator.

Intensity of the flash must be adapted to the distance of the part to be photographed. Distant objects, especially the antrum, will need a forty-five joules intensity in order to avoid under-exposed pictures. On the contrary, close objects, as the cardiac region, will be best taken at 30 joules to avoid over-exposure. These specifications are recommended for Kodachrome.

Every gastric area is a peculiar one for gastroscopic photography. The most accessible ones in the standard exploration are the easiest to snap. This is the case in the lower part, the antral sphincter, the anterior wall of the greater curvature and the peristaltic waves of the antrum. Those areas that are close to the objective lens are not as easily photographed; for example, the posterior wall and the cardiac region. This is also true when the stomach cannot retain the inflated air. If one wishes to get views of the pyloric region, he should use high intensity, as 45 joules. Aortic pulsations transmitted to the wall of the stomach do not affect the quality of the pictures.

Considering the different diseases of the stomach, we will say a word concerning the commonest ones.

An ulcer is sometimes difficult to see. Either it is on the posterior wall and it presents itself tangentially, or it is located deep in the antrum, or it is too large to be taken as a whole.

As to cancer, it is too often covered with blood or dirty mucus. At other times the air-tolerance is poor or, as in giant ulcer, it is seen incompletely.

Many polypi do not show very clearly on the pictures, since they do not give enough shadow to create the impression of relief.

Gastritis, the etat mamelonné, atrophy, and minute ulcerations demand careful adjustment of focus.

The gastroscopic examination and photography after gastric resection and gastro-enterostomy are of great interest. Following resections, there is no difficulty and we have had the opportunity of taking shots even of the small intestinal mucosa. In the second case,

photography is much more difficult since we do not see the stoma at all times.

Finally, hiatal hirmiae are the most troublesome for photography. Frequently the mucosa is very close to the lens and prolonged inflation is often necessary. To get an idea of the hernial sac, serial shots must be taken at different levels. The patient, when instructed to breathe deeply, will greatly help the procedure by opening the hiatus.

Advantages of the Method

It seems clear from these results that the use of an electronic flash has brought about a great deal of improvement in gastrophotography. Taking pictures in the stomach may become a routine procedure for the endoscopist.

Didactic and practical interest in this is being shown. Discussion of the interpretation of views by different endoscopists can be made possible from the pictures. A careful follow-up of a lesion will also be possible by the examination of pictures obtained at different examinations.

Finally, endoscopic pictures will be of great help for student teaching and gastroscopic training.

Conclusions

The best gastric pictures seem to be obtained through a gastroscope *on which the view is controlled.*

We present a gastroscope with a built-in flash lamp and a reflex camera suited for the taking of intra-gastric pictures and we state the results obtained with these instruments in a three-hundred-picture series.

This method is free of danger.

Bibliography

1. Bernay, Pierre, La gastrophotographie; avec 94 photographies stéréoscopiques. 116p. 24 pl. octavo Paris, Masson & cie, 1931.
2. Debray, Charles, La pratique de la gastroscopie dans le diagnostic et la conduite du traitement de l'ulcere de l'estomac. ii, 218p. illus. Paris, Maloine, 1937.
3. Debray, Charles and Housset, Pierre; Nouveau gastroscope flexible. Arch. mal. app. digest. 44:561-563, April, 1955.
4. Debray, Charles and Housset, Pierre; Photographie en couleur à travers le gastroscope flexible; utilisation d'un flash électronique. Sem. hôp. Paris 32 (39/5) June 30, 1956. p.2238-43.
5. Debray, Charles and Housset, Pierre, La gastrophotographie au flash électronique et la gastrocinématographie a l'aide du gastroscope flexible; premiers documents en couleurs. p.209-212 Ann. otolar. Paris 74(3) March 1957.
   Debray, Charles and Housset, Pierre, Les principaux aspects endoscopiques du cancer de l'estomac sous controle de la gastrophotographie. p.2091-5. Sem. hôp. Paris 33(33/5) May 30, 1957.
6. Henning, N. and Keilhack, H., Die gezielte Farbenphotographie in der Magenhöhle. Deutsche med. Wchnschr. 64: 1392-1393, September 23, 1938.
7. Lange, Fritz and Dr. Meltzing, Die Photographie des Mageninnern. p.1585-1588, Münchener Medicinische Wochenschrift. 45 Jahrgang. #50, December 13, 1898.
8. Rafsky, H. A. Gastrophotography in natural colors in conjunction with gastroscopy. Am. J. M. Sc. 206: 618-622, November 1943.
9. Schindler, Rudolf, Gastroscopy: the endoscopic study of gastric pathology. 2d ed. Chicago, University of Chicago Press, 1950. Bibliography p.378-414.
10. Segal, H. L. and Watson, J. S., Jr.; Color photography through flexible gastroscope. Gastroenterology. 10: 575-585, April 1948.
11. Watson, J. S., Jr., Segal, H. L., and Weinberg, S. A.; Gastroscopic color photography. J. Biol. Photographic A. 16: 23-28, September 1947.

Discussion

President Barborka: We feel that we were very fortunate at our University to have the privilege a year ago of using the first electronic flash gastroscope in Chicago, and the first in this country. I thought the audience might be interested if my associate, Dr. Keever, would demonstrate for just a few moments what the average gastroscopist can accomplish with such an instrument.

Dr. Ivan Keever (Chicago, Ill.):

I should like to take this opportunity to congratulate our friends from Paris, Professor Debray and his associate, for their diligence in working on this problem of intra-gastric photography. Evidently they have spent some time in attempting to convince the electronic-flash people that this is possible, and through their continued efforts in prodding these people, they were able to get this instrument.

It is obvious to everyone that this particular procedure has been very slow in appearing. It is one of the most remarkable things to me that people have been taking pictures in the stomach but, until just recently, we have been unable to take color pictures. Here this morning we have seen some beautiful colored pictures through the esophagoscope, through the Gastrocamera from Japan, and this gastroscope from France. As Dr. Barborka stated, this instrument deserves a field trial.

We would assume that this might be a research instrument, but actually we find that this is a very simple one to use. Some of the points of interest in its use are: it is light in weight; it is sturdy in its construction; it is very simple to operate; and so far with our own electronic-flash, picture-taking

instrument we have had few or no technical difficulties that could not be overcome in a few years.

The principle, as Professor Debray stated, is that we use a single lens reflection camera. We use it a little bit differently than does Professor Debray. We observe through the camera and then sight what we wish to photograph; it is as simple as focusing and pushing the shutter release—it is as simple as that!

We can test this instrument for shorts. It is grounded well and we have had no difficulty. We anticipated that there might be difficulty with shocks because I realize this is an objection that might be raised. But we have had absolutely no trouble. We have had this for a few months and have taken approximately fifty pictures to date. We will show you some of our better examples. (Here followed a number of colored slides showing the gastric mucosae & lesion very well.)

Gastroscopic Photography in the Demonstration of Gastric Tumors (Abstract)

ROBERT S. NELSON, M.D.*

In the past three years, during which gastroscopic color photography has been used for the routine recording of gastric lesions, it has been possible to modify and simplify the apparatus so that the whole procedure is now under the control of the operator. A reflex camera equipped with a foot switch for the control of current and a simple bayonet attachment for coupling the apparatus to the gastroscope are used. Super Anscochrome film, with exposure time of 0.5 second, has given best results. Excellent success has been obtained in the recording of intragastric tumors.

Diffuse carcinoma often presents shaggy, necrotic, mucus-covered lesions which are difficult to photograph, and while photographs may be purely academic, they do demonstrate characteristics and sometimes the extent of involvement. Carcinomatous ulcers are frequently too large to photograph in their entirety, but different areas may be visualized and recorded. Tumor masses in ulcer craters may be pictured; and differences in malignant and benign ulcers, shown by photography, may in time help in differentiation. Lymphoma of the stomach may present itself as a diffuse, gastritic-like lesion, superficial ulcer, or massive tumor, rather than as the conventional mass of heavy folds. Gastroscopic visualization of small benign tumors is often essential in the face of negative x-ray findings, and photographs are extremely useful for demonstration to the surgeon prior to operation. Heterotopic pancreas, polypi, and small leiomyomata are best shown in this manner. The larger benign tumors, although demonstrable radiologically, may be best studied following gastroscopy through color pictures. In the series reported, photographs of gastric lesions in two cases of massive carcinoma, four of ulcer, malignant and benign, five of lymphoma and two of benign tumor, are demonstrated.

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Studies on Gastric Diseases Using the Gastrocamera

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and
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The Gastrocamera herein described was first constructed in Japan in 1950 by Dr. Uji and the Olympus Optical Company. Since then we have made many studies designed to simplify the Camera and widen its clinical applicability.

The complete Gastrocamera consists of a transformer and a camera assembly; the latter is divided into three parts: the camera body, the attachments and the controls. In order to obtain clear color pictures, we use a super miniature lens camera instead of the pinhole camera. This gives an amazingly clear image of the mucous membranes. The connecting part is a vinyl tube containing four thin tubings or cords passing through its complete length. These permit the camera to be easily manipulated within the stomach. The flexibility of the connecting part and the fact that we can get 25 successive pictures of various parts of the interior of the stomach of one patient, enables a greater area to be covered than can be done with the ordinary gastroscope. Moreover, since pictures may be taken at different times in the same patient, comparisons are easily made and even minute changes of the mucous membrane may be observed.

The number of cases we have examined with the Gastrocamera in the presence of suspected gastric diseases now exceeds 3000. Thus far, there have been no accidents.

For details of the camera itself and photographic technique, one is referred to our publications.

Here we wish to present some of the impressive results of our research with the pictures taken by the Gastrocamera. (There followed a succession of color photographic slides showing gastric carcinomata.)

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Gastric Cancer

In Japan malignant tumors rank second in the causes of death. At least half of these tumors are gastric cancers. Early diagnosis of the cancer is most important.

From experience obtained so far with the Gastrocamera, it can be said with high probability that, in cases of gastric cancer of any type, there exists a characteristic formation of ulcers or erosions of various sizes and depths. Many times these ulcers or erosions are very hard to discover on x-ray examination. As an example we will present one case:

The patient's chief complaint was upper abdominal pain occurring 2 or 3 times a year at fasting time with the onset 2 or 3 years before he was seen by us. From the x-ray photographs taken during every attack of pain nothing abnormal was observed. The Gastrocamera's picture showed an early malignant ulcer. At surgical operation no hardened part was detectable by palpation of the stomach, and yet cancer was present. If this patient had not been studied with the Gastrocamera, the gastrectomy probably would not have been done in time to save the patient.

We have also an example of a patient who was advised to have a surgical operation because all the ordinary tests for cancer were positive. Pictures with the Gastrocamera definitely proved the absence of cancer and the operation was not done. The patient was a pressman. For about ten years his main complaint had been upper abdominal pain on fasting. After the x-ray examination he was advised to have a surgical operation because of a suspected pyloric cancer. We could, however, prove by the Gastrocamera technique that that part of his stomach was perfectly normal.

Gastric Ulcer

Gastric ulcer is a very prevalent disease. But, by using both the Gastrocamera technique and other tests, the rate of discovery has been much increased. We will show you some typical Gastrocamera pictures of gastric ulcers. (There followed the presentation of a number of colored slides.)

There have been cases in whom, by using the Gastrocamera, the presence of a linear ulcer (a variety of ulcer) as well as the coexistence of two or more ulcers was revealed. An ulcer suspected by x-ray examination may be excluded by the Gastrocamera technique. After two x-ray examinations in one of our patients the presence of a niche at the angulus was suspected. The Gastrocamera refuted the evidence; no ulcer was present.

It is one of the most important problems in clinical medicine to ascertain if an ulcer is malignant or benign. In this the Gastrocamera's pictures very often play important roles.

We should like to present one such case: By x-ray examination a niche was found at the upper part of the lesser curvature, but it was difficult to determine whether it was benign or malignant. Gastrocamera pictures proved that it was malignant by showing destruction in portions of the border and the uneven surrounding mucosa with several bleeding spots due to the infiltration of cancer.

Chronic Gastritis

As is well known, gastritis is a disease which gives much distress to the patient for a long period and it is an important factor in the development of cancer in some cases.

In this field it is noteworthy that pictures with the Gastrocamera may be taken as easily and as often as roentgen films. As a result, we can trace the changing phases of the mucosa. This is very necessary for the study of the true nature of chronic gastritis and its pathogenesis, especially its relation to gastric cancer.

Idiopathic chronic gastritis is classified by Schindler into three types, namely: superficial, atrophic and hypertrophic. For our own purposes we classify the gastrites into several other divisions.

The first one is a mixture of superficial and atrophic changes. The second is within the category of atrophic gastritis. Then there are those in which the degree of metaplasia has been especially increased.

Here we will show you Gastrocamera pictures following this classification. These pictures are the ones obtained from cases of idiopathic chronic gastritis which were under long observation.

(A series of colored slides was then shown. Dr. Tasaka's description of the slides is given here because it is thought that the "gastritis-minded" readers may learn something of his views from his own words. Ed.)

(1) Firstly, we shall explain the pictures of *chronic superficial gastritis*. This is characterized principally by the appearance of adherent mucus, edema and patchy reddening. Of these three signs, the adherent mucus is most frequently found.

(A) This picture belongs to this type; you can see the adherent mucus widely distributed on the anterior wall of the body of the stomach.

(B) In this picture the presence of edema and the spot-like sticking of the mucus on the anterior wall of the body of the stomach are seen. Of course bleeding and erosion often can be observed.

The appearance of erosion has a significant meaning in the first stage of cancer. We will explain more in detail concerning this matter, but generally speaking special attention should be paid to it in the diagnosis of superficial gastritis.

(2) *Chronic atrophic gastritis* is comparatively easy to diagnose with the exception of very mild cases. It is characterized mainly by the discoloration and the thinning of the

mucosa. The appearance of blood vessels through the mucosa is also a characteristic sign. They are mostly observed in the gastric body.

(A) The picture shown here is that of the anterior wall of the stomach. You can see a thick branching vessel, discoloration and thinning of the mucosa.

(B) This case belongs to the category of superficial atrophic gastritis and we very often encounter such types of gastritis.

In the course of atrophic gastritis, superficial changes, erosions and ulcerations are often observed. They sometimes disappear and then reappear. We give attention to them and follow their course closely, for we suspect that their repeated appearance may indicate one stage of cancer formation.

The slides now being shown are of a patient who has been under our observation for several years. We can observe a superficial change with bleeding spots and with atrophy. This happened repeatedly for a long period.

(C) This is an example of an atrophic change with a remarkable metaplastic appearance. The spot-like grayish yellow or yellowish green discolored mucosa is observed.

(D) There is another type of atrophic gastritis called hyperplastic gastritis in which the surface of the mucosa loses the folds normally present, becomes thicker, and discoloration and granularity are seen. When these signs have advanced, the distinction between hyperplastic gastritis and gastric cancer becomes more difficult.

(a) This is a picture of a comparatively limited atrophic-hyperplastic gastritis. Its site is the anterior wall of the upper angulus. Ulceration is shown on the curvature of the angulus also.

(b) The next one is the same type but the spread is comparatively wider.

(3) The last type of chronic gastritis is the *hypertrophic type*. Its occurrence is very infrequent as compared with the other types of gastritis that we have mentioned. This contradicts the statement appearing in many medical journals. There seems to be much confusion in atrophic and hyperplastic gastritis. From our observation, there seems to be one characteristic difference between these types and we are now endeavoring also to prove it histologically. Further details will be published in the future.

This (slide) is a picture of the posterior wall of the body of the stomach. This shows the thickening and segmentation of the folds and the formation of nodules of the mucosa in the valleys between folds. Usually secretion of mucus is decreased and the lustre of the mucosa is diminished. We are now making a special study of this type of gastritis.

The pictures of cases of gastritis show the various combinations of the types of gastritis.

Other Diseases

(We include the author's own remarks as slides were shown. Ed.) We would like to add a few more examples of benign tumors. Here is a case of neuromata. By x-ray examination they were very hard to distinguish from the first type of Borrmann.

Two other examples are those of polypi. In such cases x-ray examinations sometimes fail to make a diagnosis due to the site and size of the polypi. The Gastrocamera can prove its usefulness here, too. The first one has a smooth surface and the second one has an uneven surface. Both are actually adenomata.

Lastly, we should like to show a picture of an ascaris found in the stomach.

It is our belief, based on our experience and on the illustrative material shown here today, that the Gastrocamera is a useful and valuable diagnostic and investigative device capable of contributing importantly to the study of gastric disease.

Discussion

Dr. M. Masuda (Professor of Medicine, Kyoto Prefectural Medical College, Kyoto, Japan): I should like briefly to discuss the study of the stomach with the Gastrocamera. We also examined a number of patients with diseases of the stomach by means of the Gastrocamera.

As Professor Tasaka pointed out, it is true that the distinction between hyperplastic gastritis and gastric cancer is somewhat difficult. Also in connection with the diagnosis of gastric diseases, various questions arise concerning the diagnostic application of the Gastrocamera; these are chiefly in cases in which clinical, x-ray, and Gastrocamera examinations do not fit together, or in cases in which points of doubt are raised in making the diagnosis.

Regarding the questions concerning the type of gastritis and the small erosions, the Gastrocamera is more advantageous than x-ray.

In cases of polypi and polyposis, special care should be exercised in making diagnoses, since the Gastrocamera gives a somewhat reduced picture of the object. Utmost prudence should be exercised in discriminating between the benign and the malignant gastric ulcer, and one should not neglect to repeat the taking of pictures.

It is also difficult to give a differential diagnosis in cases of linear ulcer. In cases of penetrating ulcer, x-ray examination is the more accurate, as such ulcers may occasionally look like malignant ulcers when the Gastrocamera is used.

In cases of so-called tumor-simulating gastritis, there are cases in which cancer of the stomach cannot be excluded even though repeated examinations are made.

(Fig. 1) In this case, on x-ray examination, there appears to be a decreased stretching of the gastric wall and a stairway-like shadow defect on the greater curvature. With the Gastrocamera's picture, (Fig. 2) the fold is thickened, swollen, and simulates a tumor of Borrmann, Type IV. (Fig. 3) But macrascopic and histopathological findings showed this to be benign; there was no cancerous change though chronic hyperplastic gastritis was present.

In conclusion, diagnosis by the Gastrocamera requires the utmost prudence. In case any doubt remains after overall examination, further investigations should be made and they should include surgical and histological observations.

Figure 1 Roentgenogram to show stiffening of gastric wall and stir-step-like defect on greater curvature of stomach.

Figure 2 Black and white reproduction of Gastrocamera's colored picture of greater curvature. A cancer was suspected.

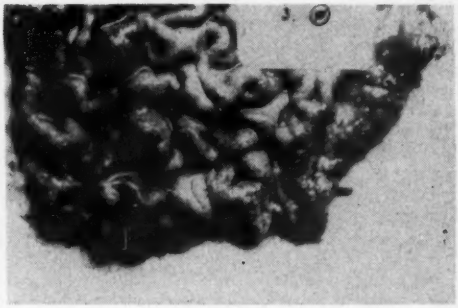

Figure 3 The stomach showed only this hypelastic gastritis.

EDITOR'S NOTE

The American Gastroscopic Society Bulletin is to be issued quarterly as the official publication of the American Gastroscopic Society, Inc. Manuscripts should be directed to Dr. Roy L. Sexton, 1801 Eye St., N.W., Washington, D.C.

All manuscripts are subject to approval and editing by the Editorial Board. Authors accept responsibility for all statements and conclusions. Manuscripts will be returned to authors upon request.

Manuscripts should be typewritten, double-spaced on 8½ x 11 inch white paper with a 1½ inch margin on both sides to provide room for copy reader's symbols. Title and author's name should appear on the upper right hand corner of each page.

References should be numbered serially and listed in the bibliography in the same order.

The bibliography should follow the form used by the Cumulative Index; e.g., King, J. M. & Woelfel, G. F.: Submucous Lipoma of the Stomach, Am. J. Surg. 83:32-34 (Jan.) 1952.

Legends, typewritten on a separate paper, should accompany all illustrations. Author's name and address should appear on the back of all photographs.

CASE REPORTS

Giant Villous Adenoma of the Stomach

IRWIN M. ARIAS, M.D.* †

At the time of Walk's review in 1951 there were 51 published cases of giant villous adenoma of the stomach in the literature (1). Walk suggested that a differentiation of the villous tumor is to be desired because of the different clinical appearance and the high rate of malignant change as compared with ordinary polypi.

The following case illustrates the clinical, radiologic and gastroscopic features of this rare disease, as well as noting a previously unrecorded familial occurrence of giant villous tumors of the gastro-intestinal tract.

J.K., a 34 year old white male taxi driver, entered the Boston City Hospital on November 3, 1954, because of postprandial epigastric distress with infrequent nausea and regurgitation of three months duration. A ten-pound weight loss, without concomitant anorexia, and periodic passage of bright red blood by rectum had been noted for ten months. Physical examination revealed moderate tenderness to deep palpation in the right epigastrium and external hemorrhoids. Two small pedunculated polypi were removed at sigmoidoscopy and histologically showed "chronic inflammation throughout with foci of atypical cells without apparent invasion of the stalk". Laboratory study revealed an hematocrit of 40%; the W.B.C. were 10,500/cu.mm.; a stool was guaiac-negative and a gastric analysis revealed no free acid after histamine stimulation. An upper gastrointestinal series was interpreted as showing "a suspicious filling defect of the stomach involving the greater curvature and antrum". The patient refused further study and signed himself out of the hospital on the seventh hospital day.

The patient's symptoms sporadically recurred and were usually relieved by administration of anticholinergic drugs and antacids. Three months prior to his second hospital admission and shortly following an alcoholic spree, persistent mid-epigastric "burning" distress, occasional nausea without vomiting and postprandial fullness were noted. Bright rectal bleeding and a further ten-pound weight loss occurred. Physical examination revealed only signs of chronic weight loss; no lymph nodes or abdominal organs were palpated and rectal examination revealed hemorrhoids as before.

At this time a detailed family history became available. The patient's mother was alive and well at age 71. She had had a villous adenoma removed from her midtransverse colon at another hospital six months previously. The patient's father died of unknown cause when the patient was very young. There were two brothers, one of whom was alive and well at age 35. The second brother had died at the age of 38, in another hospital, of adenocarcinoma of the stomach. At autopsy, two giant villous adenomata were found in the descending colon and were thought to be histologically benign. The patient's four children were normal when they were examined clinically and radiographically; and they did not have anemia, gastric achlorhydria or guaiac-positive stools.

The patient's laboratory studies revealed an hematocrit of 30%, W.B.C. of 9,000/cu.mm. with a normal differential count. The red blood cells were microcytic and markedly hypochromic. The stool was repeatedly guaiac-negative. Urinalysis and other routine blood studies were within normal limits. No free acid was obtained on gastric analysis after histamine stimulation. Proctosigmoidoscopy revealed six pedunculated polypi in the rectum and sigmoid colon which were removed and were histologically benign. An upper gastrointestinal series revealed a large, irregular, mottled filling defect along the greater curvature of the stomach with multiple, circumscribed areas of radiolucence on its surface; the mass was soft, pliable and movable on palpation during roentgenoscopy and peristaltic waves were only seen in the antral area of the stomach. The radiographic findings were similar to those which had been noted two years previously.

Gastroscopic examination was performed. Preliminary aspiration of the stomach was productive of small amounts of blood. Inadvertently a suction biopsy was obtained while washing the stomach with normal saline through an Ewald tube; histologically this showed squamous epithelium overlying mucus-secreting glandular epithelium. Gastroscopically, there was full visualization of the body and proximal antrum of the stomach. The entire greater curvature showed a markedly irregular mucosa which appeared redundant in many areas, with large amounts of mucus between the folds. Numerous fine villiform structures, which were quite movable as the

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stomach was inflated with air, were noted. There was no rigidity of the body or antrum of the stomach; however no peristaltic activity was noted in either area. The tumor mass was paler than the normal mucosa and was neither ulcerated nor infiltrated. Gastroscopy was repeated two days later and no further information was obtained. The gastroscopic impression was that the patient had an infiltrating gastric carcinoma with polypoid changes. Exfoliative cytology, obtained at gastroscopy, revealed only sheets of normal squamous cells.

At operation, a huge, soft, pliable tumor mass was found to occupy most of the greater curvature of the stomach; this extended well into the antrum. The entire tumor area consisted of villiform processes measuring from 2 mm. to 2 cm. in length and appearing pale in comparison with the remainder of the stomach. Two 1.5 cm. polypoid tumors were present in the fundus of the stomach and they did not show any evidence of ulceration. Two firm lymph nodes were palpated in the lesser omentum along the lesser curvature of the stomach. A subtotal gastric resection was performed with removal of the regional antral lymph nodes and the small polypi in the fundus.

Multiple histologic sections of the main tumor mass revealed two focal areas of adenocarcinoma, as well as carcinoma in the regional lymph nodes. The main tumor mass consisted of multiple fine, polypoid structures covered by either squamous or normal gastric epithelium. Few parietal cells were noted in the resected specimen. The final histologic diagnosis was giant villous adenoma of the stomach with adeno-acanthomatous changes and two areas of adenocarcinoma.

The patient tolerated the operative procedure well and, when last seen six months after surgery had been performed, he had gained five pounds, was working full time and showed neither clinical nor radiologic evidence of recurrent tumor or metastasis.

Discussion

Giant villous tumor of the stomach has been reported in patients from 30 to 80 years of age with the peak incidence in the sixth decade (1). The tumors vary from 1-2 cms. to more than 10 cms. in circumference and, in general, the incidence of malignant change increases markedly in proportion to the size of the tumor. In Walk's series, 80% of the lesions greater than 8 cms. in circumference were malignant, whereas 30% of the 1-2 cms. lesions were malignant (1). In general, the growth of the tumor is slow, as illustrated by the documented two-year interval in the current patient's history. Botticher and Rothe have reported that cases with palpable gastric tumors of five years' duration before operation revealed malignant giant villous adenoma of the stomach (2, 3).

The majority of the reported cases have had severe iron-deficiency anemia resulting from chronic blood loss from the highly vascular tumor (1). In the current case, anemia was not marked and the clinical symptoms were highly non-specific. This observation has been made before in this illness (3, 4). About a third of the patients have a palpable epigastric mass. The remainder of the clinical signs are those of anemia. Only rarely does the presence of a metastasis dominate the clinical findings (5).

Three-fourths of the patients have been reported to have achylia gastrica (1). The current case did not secrete detectable amounts of gastric hydrochloric acid after stimulation with histamine.

Radiographically, the findings produced by a villous tumor of the stomach are essentially similar to those in other extensive polypoid or papillomatous neoplasms. Characteristically a radiolucent area of varying size is demonstrated in the stomach. The margins of the defect are sharply defined and present an abrupt demarcation from the normal mucosal pattern. The tumor is usually movable and prolapse through the pylorus into the duodenum may occur. In contrast to the usual polyp, which presents a smooth surface, that of the villous tumor is irregular, producing multiple radiolucent defects in the opaque medium. The circumscribed radiolucent areas give rise to the "soap-bubble" effect which is considered characteristic of this lesion. If ulcerations are present, they may be evidence roentgenographically as localized accumulations of the opaque material on the surface of the tumor.

Gastroscopic observations are reported in only three cases (1, 6, 7). Mouchet observed "a characteristic polypoid growth"; Udaondo described a "mediogastric cancer", and Walk observed gastric atrophy and an "oval tumor with many clefted surfaces". The unusual degree of mucus surrounding the villi in the present patient prevented a completely satisfactory inspection of the tumor mass.

The prognosis in surgically treated cases is difficult to evaluate due to the rarity of the lesion. In a report of 35 cases who were operated on, the tumor mass was either confined to the stomach or involved local lymph nodes by direct extension in 24, and 2 patients had hepatic metastases at operation (1). It has been suggested that, due to the slow-growing nature of the tumors, resection may be expected to yield a satisfactory outcome for most patients (1). The present patient, six months after surgery, did not show clinical or radiologic evidence of recurrence or metastasis.

The unusual family history of villous tumors of the gastrointestinal tract, as seen in the family reported, has not been commented upon in previous reviews.

REFERENCES

1. Walk, L. Villous Tumor of the Stomach. Arch. Int. Med. *87:* 560, 1951
2. Botticher, M. Magenpapillom. Med. Klin. *21:* 488, 1925
3. Rothe, H. Uber einen weiteren Fall von gastroduodenaler Invagination bei Polyposis ventriculi. Roentgenpraxis *13:* 104, 1941
4. Marre, P. Tumeurs Villeuses de l'Estomac Paris, 1942
5. Verse, M. quoted by Walk (1)
6. Mouchet, A. et al. Tumeur Villeuse de l'Estomac Arch. d. mal. de l'app. digestif *38:* 266, 1949
7. Udaondo, B. C. et al. Polipo velloso del estomago. Prensa med. argent. *31:* 1914, 1944

Suture in Stomach Removed With Benedict Operating Gastroscope *

LOURDES F. OLIVARES-AGCAOILI, M.D.†

and

J. ALFRED RIDER, M.D.‡

Quite often old silk sutures are found in the vicinity of the anastomotic site of the post-operative stomach. According to Palmer (1), non-absorbable sutures are ordinarily extruded into the bowel lumen within several weeks to a few months following surgery. As a rule, they constitute harmless foreign bodies except when they cut through the gastric mucosa and serve as a source of mucosal irritation, causing either inflammatory changes or actual ulcer formation. However, Schindler (2) feels that, if silk sutures are observed soon after operation, elimination by being sloughed off into the cavity of the stomach rarely occurs. It is his opinion that, if they persist, and especially if concomitant clinical symptoms exist, surgery is necessary.

This case report is of interest in that a free suture was seen gastroscopically in a patient with intractable gastro-intestinal complaints. The suture consisted of intertwined silk and cotton threads. This was partially removed with biopsy forceps through the Benedict operating gastroscope.

CASE REPORT

V. A., a 42 year old white unmarried carpenter, first came to the University of California Hospital on February 6, 1957. He complained of intermittent bouts of upper abdominal pain with occasional nausea and vomiting. These complaints had been present over a period of 10 years. The patient had lost 20 pounds in the preceding two years. Accompanying records from another institution indicated that an upper gastro-intestinal series was done in November, 1955, and was reported to show a penetrating duodenal ulcer. On December 5, 1955, he underwent a subtotal Billroth II type of gastric resection. The pathological diagnoses were: 1) acute pyloric ulcer, 2) chronic gastritis, and 3) no duodenal ulcer. Following the surgery he developed symptoms compatible with a dumping syndrome. Therefore, he underwent a further gastric resection of the Billroth I type on June 20, 1956. Pathological diagnoses were: 1) chronic gastritis and 2) chronic duodenitis. Despite surgical intervention, epigastric pain and nausea, which were not relieved by an ulcer regimen, persisted.

Physical examination on admission was not remarkable except for midline epigastric tenderness.

Pertinent laboratory work: Routine blood and urine examinations were negative. Liver function studies were within normal range. Gastric analysis showed a basal achlorhydria but, on histalog® stimulation, there was a maximum of 21 units of free HCl. The 24-hour uropepsin excretion was 28.3 units/hr. Gastric cytology was negative. An upper gastro-intestinal series, with a small bowel follow-up, revealed no marginal ulcer, but there was some stasis in the duodenal loop which was interpreted as being either due to post-surgical changes or to a chronic pancreatitis.

Gastroscopy was done on February 25, 1957. This revealed a normal gastric pouch, but on the greater curvature of the distal body of the stomach there was noted the free end of a black silk suture which disappeared from view into the lumen of the distal tubular stomach.

The Benedict operating gastroscope was then passed and this suture was secured with the biopsy forceps. The suture broke when it was pulled and the distal part disappeared from view. On examination, the suture in the biopsy forceps appeared to be black silk about 3 cm. long and knotted several times with a smaller cotton suture. (Fig. 1)

Since there was no obvious inflammation in the visible gastric mucosa, it was felt that the suture had nothing to do with the patient's symptoms and that no surgical procedure was indicated on this basis. Furthermore, since the suture showed evidence of disintegration, it was felt that the piece in the stomach probably would not remain there over a long period of time.

A recent follow-up on April 28, 1958, through the patient's local attending physician, revealed that, although the patient still had symptoms for several months after discharge from the University of California Hospital on

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March 1, 1957, these later cleared up spontaneously. The physician feels that there was a great deal of functional overlay in the patient's complaints and his clinical improvement coincided with the improvement in his mental attitude. At the present time the patient is doing well.

In summary, this is a case of a patient with a pyloric ulcer who underwent a subtotal Billroth II type of gastric resection only to be followed by a Billroth I gastric resection because of a dumping syndrome. He continued to have symptoms, despite a strict medical regimen. Gastroscopy revealed the free end of a silk suture, on the greater curvature, which was partially removed with a biopsy forceps through the Benedict operating gastroscope. However, it was felt that the patient's symptoms were not attributable to the presence of the suture in the stomach.

References

1. Palmer, Eddy D.: Clinical Gastroenterology. Harper & Brothers, New York, 1957. pp. 238-239.
2. Schindler, Rudolf: Gastroscopy, The Endoscopic Study of Gastric Pathology. University of Chicago Press. Chicago, 1937. pp. 358-359.

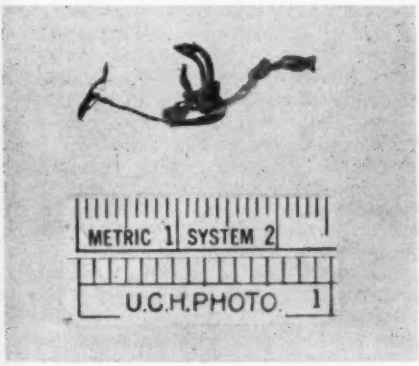

Figure 1. Knotted silk and cotton suture

Radial Nerve Palsy Following Gastroscopy

MARSHALL A. FREEDMAN, M.D.*

The left lateral position is the accepted standard position for the patient undergoing gastroscopy. The patient lies on his left side with the left forearm under the thorax and supporting it, while the elbow is bent anteriorly at right angles to assist in maintaining balance. Although this posture is known to be uncomfortable, it is not generally appreciated that radial nerve injuries may be caused by pressures exerted by the weight of the body in the course of gastroscopy.

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Case Report

The patient was a 76 year old white accountant with known achlorhydria for 17 years and pernicious anemia for 2 years. Hematologic remission was maintained through monthly injections of vitamin B_{12}. Although there were some tingling sensations in the left leg, there were no alterations of reflexes or of vibratory or position senses. In 1955 a gastric polyp had been removed from his stomach after visualization by x-ray and gastroscopy. The gastric mucosa was atrophic at operation and the necessary follow-up examinations were performed in the Out-Patient Department at suitable intervals. Such a recheck gastroscopy was carried out on October 18, 1957, at which time the usual premedications with intravenously administered demerol and atropine and the customary topical pyribenzamine solution were used. The examination was somewhat prolonged by poor visualization of portions of the stomach and by the necessity of lavaging for the extraction of some gastric residue, but no ill effects were noted until the completion of the procedure. At this time the patient complained of some clumsiness of the left hand. At first this was thought to be a cerebral vascular accident and oxygen was administered promptly. The pulse was 80 beats per minute and the blood pressure 100/80. The fingers of the left hand could not be extended. Detailed examination disclosed a flaccid paralysis of the extensor carpi ulnaris, extensor digitorum communis, extensor digiti quinti, extensor carpi radialis, extensor indicis and both the extensor pollicis and the abductor pollicis brevis. No sensory loss was identified and the triceps and the brachioradialis were normal in strength as were the muscles innervated by the median and ulnar nerves. Because of the distribution of the palsy, the lesion was tentatively identified as a pressure injury to the deep interosseous branch of the radial nerve. The patient was reassured that return of function was to be expected and no therapy was recommended other than home measures to prevent contractures. The paralysis was improved the following week, markedly better one month after the injury, and completely recovered when last observed in March, 1958.

Comment

The course of the radial nerve makes it especially vulnerable to pressure injuries. The wrist drop of "Saturday-night paralysis," in which the drunken patient hangs his arm over the back of a chair and awakens palsied, is well known. In gastroscopy in the left lateral position, the radial nerve is compressed in several locations along its course by the weight of the body. That a pressure injury should

take place is not unexpected under the circumstances. Whether the patient's pernicious anemia made him more susceptible to nerve injury is not known.

SUMMARY

Paralysis of wrist and hand muscles, innervated by the deep interosseus branch of the left radial nerve, followed gastrocopy in the left lateral position in a 76 year old man with pernicious anemia. A complete spontaneous recovery took place.

Retained Food Particles Mistaken For Gastric Polypi

ROBERT H. SMITH, M.D.*

The following case report concerns a patient in whom retained food products were mistaken, both gastroscopically and roentgenographically, for gastric polypi. Although such an error is commonly made during x-ray examination, the gastroscopic error was caused by the nature of the retained food material.

CASE REPORT

A forty-year old female was brought to the hospital in 1952 complaining of nausea, vomiting, melena and weakness of 3 days duration. No previous history of gastro-intestinal distress was obtainable except for a tendency to vomit easily when emotionally upset. Her past history was essentially insignificant except for a hysterectomy in 1946 for the removal of a uterine fibroid and an oophorectomy in 1935 for the removal of a benign cystadenoma. The family history was negative.

Physical examination disclosed a pale white woman with slight epigastric tenderness.

Laboratory studies disclosed occult blood in both stool and emesis material; hematological examination showed 3.16 M RBC, a hematocrit of 26%, and 8.5 gms. of hemoglobin. There were 17 units of free HCl present in a specimen of gastric content. A G-I series on August 13, 1952 showed a normal esophagus; a number of rounded densities, movable over a distance of about 4 cms., were seen in the stomach; they measured as large as 1.5 cms. in diameter. About 3 cms. from the pylorus there was very definite evidence of an ulcer crater on the lesser curvature. The pylorus was quite irritable and the duodenal cap never filled properly; a very definite ulcer niche was demonstrated in the duodenum. There was about 30% emptying in 3 hours. The x-ray impression was a gastric ulcer, duodenal ulcer, and negative shadows suggestive of gastric polypi.

A G-I series was repeated on August 18, 1952 and disclosed evidence of fasting residue. The numerous negative shadows were again found in the stomach and gastric ulcer and duodenal ulcer craters were once more identified. Follow-up films again showed delayed gastric emptying and the x-ray impression remained, "Probable neoplastic mass."

A gastroscopic examination was made on August 20, 1952. The ulcer crater, located on the lesser curvature, was visualized readily and seemed to be benign in appearance. On the anterior wall, close to the greater curvature, 2 masses were seen; the more proximal was about the size of a ping-pong ball and it was covered with a white mucous material. Immediately adjoining it, a black necrotic mass was visible. It was not possible, because of the anxiety and restlessness of the patient, to manipulate these masses and it was not possible to determine whether they were fixed to the mucous membrane or lying free in the gastric lumen. The gastroscopic impression, however, was that they were gastric polypi, one of which had undergone necrosis and ulceration.

The patient was operated on August 27, 1952; the stomach was found to be dilated and the walls were thick. There was a scar of an anterior duodenal ulcer distal to the pylorus; also there was scarring caused by a peptic ulcer proximal to the pylorus on the anterior aspect of the lesser curvature. The stomach was opened and found to contain a rounded piece of dark green watermelon rind and a peach stone! Gastric resection and anterior gastrojejunostomy were done because of severe cicatricial stenosis of the pylorus.

The pathological report confirmed the identity of the foreign bodies and also demonstrated a benign ulcer on the lesser curvature. The pyloric canal was only 5 mm. in diameter and the gastric mucosa showed evidence of chronic non-specific gastritis.

Postoperative progress was uneventful and the patient has remained well and symptom-free.

**Colorado Springs, Colorado.*

FOREIGN LETTERS

Our Correspondent Observes the European Endoscopic Scene

These are dark days for gastroscopically accountable European correspondents. In the first place, any medical correspondent who has not spent at least a couple of weeks snooping around Moscow doesn't rate at all. In the second place, now that the world's leading gastroscopists have been sieved clean of their confusing surroundings and set down at the Washington meetings for all to inspect close at hand, a correspondent tends to hole up, for fear that impressions recorded from native habitats will no longer prove quite so acceptable.

If the question put to the correspondent is, as it must primarily be, just how much does esophagogastric endoscopy influence the European practice of gastroenterology today, then the answer is easy—not much. I might say hardly at all, when the answer is based on private practice and city and district hospital practice. There is little interest because no need is recognized. It is hard to find gastroscopists in Europe apart from the very few about whom everyone knows, reads, and, perhaps, has met. These are almost exclusively university-affiliated endoscopists. The most discouraging fact is that they are also the old-timers, men who were in on the exciting beginnings of gastroscopy. There are no new gastroscopists coming along or, at least, very few.

One might suppose that a familiar medical explanation is behind this: If a man doesn't work on development of a technic himself, it is difficult for him to become truly enthusiastic about it. But there is probably more to the explanation. One fairly obvious determent to a new generation of gastroscopists is, unfortunately, another familiar problem in medical education. In Europe, speaking generally, gastroscopy seems to be a rather jealously guarded mysterious procedure to which students are not invited. Training is limited to few of the select, as though there is to be only a one-for-one replacement as the older generation dies off. That obviously is a very unfair statement when one gets down to certain individual cases. For instance, every doctor passing in the hall is fair game for Dr. Josef Schmid of Fehlinger's University Clinic in Vienna, who, in his enthusiasm to teach, regularly grabs bewildered people to show them the wonders of a certain gastroscopic view. But the fact remains that there appears to be very little gastroscopic training in Europe.

Perhaps it is not correct to assume that there is demand for training. I have encountered a few men who traveled to the States to learn gastroscopy and who, now that they are back home, find they can make little use of the procedure. Dr. Michelangelo Santoro, of Rome, is a good example. He told me that he receives no referrals for gastroscopy and that there isn't enough enthusiasm for gastroscopy among his colleagues to encourage a young man to strike out boldly in the examination of his own patients. He would like to be the local voice crying in the wilderness but hardly dares.

On the brighter side—if a little Department of the Army pride is excusable—I must mention that during the past two years there have been active gastroscopy and medical esophagoscopy at 6 of the Army's 21 European hospitals. Since some of these hospitals are very small, this is a rather remarkable degree of endoscopic coverage. Gone are the days when doctors from the University of Munich brought their patients to an Army hospital to be gastroscoped, but there is still opportunity to demonstrate to German colleagues. This is largely implemented through training of German interns at our one Army hospital which is actively engaged in a German intern program. Here six interns to date have been trained in medical esophagoscopy and gastroscopy, and they have shown interest and the ability to carry out effective examinations. The program will be continued but, again, these men and women have doubts as to whether they later will be able to make good use of this aspect of their American training.

EDDY D. PALMER, LT. COL., M.C., U.S.A.

ABSTRACTS of CURRENT LITERATURE

HIRSCHOWITZ., B. I., CURTISS, L. E., PETERS, C. W., Demonstration of a new Gastroscope, the "Fiberscope". Gastroenterology, 35: 50 July 1958.

The principle of fiber optics has been applied in the development and construction of a completely flexible optical instrument which allows direct visualization of the cavity of the duodenum. The essential light conduction takes place through a bundle of glass fibers of hair thickness. The image is transmitted by having the spatial arrangement of the fibers exactly the same at each end of the bundle. Extreme flexibility is allowed by fixation only at the extreme ends of the fiber bundles. The incorporation of a flexible metal sheath allows rotation of the instrument in its long axis. The image is focused onto the end of the fibers by a composite lens, a single focusing arrangement allows one to focus from contact to infinity.

The advantage of this instrument, above that of visualizing the duodenum, are: (1) its complete flexibility without image distortion, (2) it provides excellent light transmission, (3) it enables one to view from contact to infinity so that the esophagus, stomach and duodenum all can be visualized in one instrumentation. The authors have, in fact, already visualized a duodenal ulcer in situ.

The possible application of this type of instrument to visualization of the small intestine and colon is discussed.

MELVIN I. KLAYMAN, M.D.

GARRY, M. W., Use of Silicone Antifoam in Gastroscopy. Am. J. of Gastroenterology 6:733, Dec. 1956.

Silicone XEC 151 (Dymasyl) with defoaming properties was used prior to gastroscopy on 200 patients and compared to a control group of 200 on whom silicone was not used. A diluted emulsion of XEC 151 was used mixing 1 cc. of XEC 151 with 1 cc. of water. This mixture was introduced into the esophagus with a 10 cc. syringe through a small tube 26 cm. in length and 0.4 cm. in diameter. This was followed by withdrawal of the tube.

In the control group 66% of patients showed bubbles, half of which were serious enough to interfere with gastroscopic examination. In the group where silicone was used, only minimal bubbles were observed in 33% of cases and they did not interfere with gastroscopic examination.

The antifoaming agent appeared to be nontoxic and had no secondary effect on the gastric mucosa.

VICTOR WILLNER, M.D.

SCOTT, N. M., SCOTT, N. M. JR., PRESTON, J. A., AND PALMER, EDDY, Gastroscopic Burns of the Gastric Mucosa Gastroenterology 32:708, April 1957.

A study was made on dogs to determine whether routine gastroscopy would produce burns in the gastric mucosa. It was found that burns in the gastric mucosae of dogs were regularly produced during gastroscopy when a standard clinical gastroscope was used. The severity of these lesions was roughly proportional to the duration of the examination. All healed rapidly without residuals. It was pointed out that probably similar burns are produced in humans during gastroscopy and that, although these burns are not harmful per se, there is a possibility of confusion of these lesions with more serious disease of the stomach, especially with carcinoma. An awareness of this danger will lead to the inclusion of gastroscopic burns in the differential diagnosis of all lesions in the posterior wall of the stomach in patients who have been recently gastroscoped.

R. A. MCNAUGHTON, M.D.

WOLF, J., ROSSMAN, M., AND FLOOD, C. A., Gastroscopic Findings in Patients with Subtotal Gastrectomy. Gastroenterology 32: 1050, June 1957.

This report summarizes the gastroscopic findings in 62 relatively asymptomatic patients subjected to subtotal gastrectomy compared with a group of 82 with symptoms following this operative procedure. The average time between operation and gastroscopic examination was 3.5 years in the former group and 3.9 years in the latter group. As would be expected, the symptomatic group had symptoms suggestive of recurrent ulcer following gastrectomy. The authors found no difference in the size of the gastric remnant or stoma in patients with or without the dumping syndrome. The incidence of normal gastric mucosa was the same in both the symptomatic and asymptomatic groups. Also, no correlation was noted between the size of the gastric remnant and the recurrence of an ulcer; the latter was found in 19 of 82 patients in the symptomatic group and in none of the controls. Employing radiological and gastroscopic procedures, 34 recurrent ulcers were demonstrable in the 82 symptomatic patients. The authors concluded that gastroscopic visualization of a fish-mouth narrowed stoma was significant and indicative of ulcerative disease. This feature was noted in 16 of 82 patients with symptoms and in 2 patients in the control series. The authors also support the contention that so-called post-

operative gastritis or enlarged gastric mucosal folds do not explain the dyspeptic complaints of patients with postgastrectomy symptoms because these findings were visualized in a substantial number of their asymptomatic patients.

MARTIN S. KLECKNER, M.D.

SCHNEIDER, M. A., DELUCA, B. AND GRAY, S. J., The Effect of Spice Ingestion upon the Stomach. Am. J. Gastroenterology 26:722, Dec. 1956.

In an attempt to obtain objective evidence for the elimination of spices from the diet, the authors studied the effect of spice ingestion in various gastro-intestinal disorders.

Fifty patients with active peptic ulcer were maintained on an ulcer regimen and they were given either cinnamon, nutmeg, allspice, mace, thyme, sage, paprika, caraway seed, chili pepper, cloves, black pepper, or mustard seed in doses of .05 to .9 gm. three times daily with meals for periods up to 180 days. Only five patients in this group developed symptoms during the administration of the spices: two from black pepper, one from chili pepper, one from nutmeg, and one from mustard seed. Spices, with the exception of those noted above, do not appear to alter the healing time of an ulcer.

In fifteen patients gastroscopy was done before and 10 minutes after a watery suspension of cinnamon, nutmeg, allspice, thyme, black pepper, chili pepper, cloves, or paprika was instilled into the stomach. Black pepper and chili pepper, which produced symptoms, also induced the most marked hyperemia and edema of the gastric mucosa observed gastroscopically. Thyme and mustard produced gastric erythema.

The uropepsin excretion was not altered by the ingestion of spice.

Spices, with the exception of chili pepper and black pepper, if ingested with meals, do not appear to retard ulcer healing or produce untoward gastric symptoms or reactions.

HUGO C. MOELLER, M.D.

ADRIANI, J. AND CAMPBELL, D., Fatalities Following Topical Application of Lcoal Anesthetics to Mucous Membranes. J.A.M.A. 162: 1527 Dec. 22 1956.

The authors reviewed fatalities occuring secondary to topical anesthesia for endoscopic procedures during a fifteen year period. Ten deaths were caused by Tetracaine (Pontocaine). Although other agents caused untoward reactions, none terminated fatally. Analysis of these ten records disclosed the following findings:

1) The operator was unaware of and disregarded maximum amounts of the anesthetic. Where recorded, an excess of 8 c.c. of a 2% (160 mgm.) was used.
2) The operator was a novice and did not use the drug frequently.
3) The reaction was abrupt, without prodromata, with rapid syncope and circulatory collapse; convulsions did not occur.
4) Antidotes and resuscitative equipment were not immediately available.
5) Barbiturates were used as antagonists, even though the patient was in respiratory failure and there was no indication for their use.

The treatment of untoward reactions by Tetracaine is directed toward correction of the circulatory and respiratory failure. If cardiac arrest is suspected, opening of the chest and cardiac massage is indicated. For hypotensive effects, intravenous vasopressor medication should be administered. Artificial respiration must be instituted and maintained for apnea.

Studies of blood levels of Tetracaine indicate that absorption from the mucous membrane is rapid and simulates intravenous administration. The cause of death appears to be overdosage from rapid absorption.

MELVIN I. KLAYMAN, M.D.

FLASDICH, R. M., BENNETT, H. D., Observations on Perforation at Gastroscopy: Review of the Literature and Report on a Case Without Visible Perforation. Am. J. Gastroenterology 29:45 Jan. 1958.

A case of pneumoperitoneum, pneumomediastinum and subcutaneous emphysema as a complication of gastroscopy is reported. A site of perforation could not be demonstrated at surgery by inflation of the esophagus and stomach separately both in air and underwater (saline).

Review of the literature disclosed 27 cases of probable perforation of the gastrointestinal tract at gastroscopy from 1936 to 1955. Pneumoperitoneum was the most common sign of perforation. Of 11 operated cases, no site of perforation was demonstrated in 6. One patient with proven gastric perforation had pneumomediastinum and subcutaneous emphysema in addition to pneumoperitoneum. A patient with esophageal perforation had only pneumoperitoneum.

Before 1948 surgical treatment (laparotomy) was usually performed. Since then conservative therapy consisting of antibiotics, nasogastric suction drainage, and aspiration of pneumoperitoneum if necessary has given equally satisfactory results. Benignancy of the lesion is ascribed to the occurrence of perforation in the fasting state. Many of the perforations are not through-and-through but are leakages of air by devious routes, either vascular or along tissue planes. The authors urge conservative therapy unless true signs of localizing infection occur.

FRANCIS J. OWENS, M.D.

NELSON, R. S., and SCOTT, N. M. JR., Heterotopic Pancreatic Tissue in the Stomach—Gastroscopic Features. Gastroenterology, 34:452. March 1958.

The most frequent location of aberrant pancreatic tissue in the gastrointestinal tract is in the antral portion of the stomach and in the duodenum. A presumptive diagnosis may be made on x-ray when a circumscribed filling defect is seen with the central portion filled with barium, corresponding to the pancreatic duct. The majority of these lesions are single, though they may be multiple. Pathologically, three forms are described: (1) intramural form which produces only some thickening; (2) subserosal form which has a hemispheric appearance and, (3) submucosal form which can be subdivided into three types (a) small masses with superficial creases, (b) small cone-like tumors, and (c) nipple-like projections.

There are only insignificant changes in the surrounding mucosa. The authors review the previous literature and add their own five cases. Gastroscopically in four of their own cases the aberrant pancreatic tissue tumor had some polypoid appearance, was located in the antrum, and was accompanied by small ulceration which had a tendency to heal quickly. The small nipple-like projection of the mucosa is often flattened out with peristalisis of the mucosa moving freely over it. No central dimples were seen, as has been frequently described on x-ray. The investigators stress the point that some of these small tumors may be missed on x-ray but seen on gastroscopy.

VICTOR WILLNER, M. D.

THE EDITORIAL BOARD SPEAKS

My dear Colleagues,

The Governing Board of our Society has plotted a new course for our Bulletin under the direction of our Editor and with the financial assistance of Mrs. Bruce Smith of Washington, one of our new members. The plan is to have an issue of The Bulletin appear quarterly in February, May, August, and November.

In order to issue so frequently a Bulletin of scientific interest and worth, we must have a steady flow of material to our Editor. Let me urgently solicit your contributions to our publication. Case reports are always instructive. Perhaps you have published in a foreign journal something which concerns endoscopy of the upper digestive tract and so it has escaped our attention. We would be happy to consider its re-publication in English in The Bulletin. We will be glad to publish comments on controversial points—scientific or concerning the Society—as well as letters carrying news of endoscopy and endoscopists. Ours has always been an informal society, one in which any of us might write or speak his mind.

I would like to send a personal letter to each of you to invite your contributions to our publication. Unfortunately circumstances make such a letter impractical but do consider this to be a kind of substitute.

Please remember that this is *your* Bulletin and that it represents *your* Society. It will be what we members make it!

Faithfully,
JOHN TILDEN HOWARD,
For The Editorial Board